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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,223	10/05/2001	Mitchell Rosen	1819/100211	4639

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Gunnar G. Leinberg, Esq.
NIXON PEABODY LLP
Clinton Square
P.O. Box 31051
Rochester, NY 14603

EXAMINER

WU, JINGGE

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/972,223

Applicant(s)

ROSEN ET AL.

Examiner

Jingge Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-6, 14, 18, 20-27, 32-35, 37-39 and 41 is/are rejected.
- 7) ☐ Claim(s) 7-13, 15-17, 19, 27-31, 36 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5/16/02.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Objections

1. Claims 21 and 32 are objected to because of the following informalities: the claim language should be changed to "the number of the first and second channels are identical". Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 14, 18, 22-27, 33-35, 37-39 are rejected under 35 U.S.C. 102(b) as being anticipated by the article "Multi-spectral color reproduction research at the Munsell Color Science Laboratory" to Berns et al.

As to claim 1, Berns discloses a method for spectral imaging, comprising:

capturing high spectral resolution data of at least a first portion of a first scene using a first plurality of channels (page 16, section 3, note that the first plurality of channels could be 61 channels);

determining a first set of channels (minimum number of channels) from a second plurality of channels which can reconstruct spectral of the first portion of first scene (page 16, section 3, page 18) to satisfy a first error criterion when compared with the

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captured high spectral resolution data (Fig. 1, page 15-16, section 3, note that the error criterion is the least-square); and

capturing pixel data of at least a second portion of at least first scene using the first set of channels (page 16-18, section 3, note that capturing or reconstructing at least a portion of pixel data is inherent when the portion of the image is reconstructed).

As to claim 2, Berns further discloses the first set of channels comprises a smallest number of the plurality of channels (minimum channels) which can be used to reconstruct spectral of the first portion of the first scene to satisfy a first error criterion when compared with the captured high spectral resolution data (page 16, section 3, note that the error criterion is the least-square).

As to claim 3, Berns further discloses the data of the channels are stored (Fig. 1), other limitations are discussed with regard to claim 1.

As to claims 4-6, Berns further discloses determining a first transform from the first set of channels and using the transform to reconstruct image spectra (Fig. 1, page 16, section 3, note that equations 1 and 2 are transforms, the storing the transform is inherent), other limitations are addressed with regard to claim 1.

As to claims 14, Berns further discloses storing the captured pixel data (Fig. 1).

As to claim 18, Berns further discloses the first error criterion requires that the reconstructed spectra of the first portion of the first scene be within a first error tolerance or the reconstructed spectra be associated with a minimum value for predetermined metric when compared with the captured high spectral resolution data (Fig. 3, page 16-17, section 3, note that the error criterion is the least-square).

As to claims 22-26, the claims are corresponding system claims to claims 1-6.

The discussions are addressed with regard to claims 1-6.

As to claim 33-35 and 37-39, the limitations are discussed with regard to claims 1-6, 14, and 18.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 21, 32, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berns in view of US 5949914 to Yuen.

As to claims 21, 32, and 41, Berns does not explicitly mention the number of first and second channels or subsystems are identical.

Yuen, in an analogous environment, discloses using multiple identical channels or sub-imaging systems (Fig. 9a).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Yuen in the method of Berns in order to increase the resolution of the multi-spectral image data (Yuen, col. 2 lines 3-12).

Allowable Subject Matter

6. Claims 7-13 , 15-17, 19-20, 27-31, 36 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7, 20, 27, 36, and 40 are objected. Claims 8-13, 15-17 and 19 depend from claim 7, therefore, are objected. Claims 28-31 depend from claim 27, therefore, are objected.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6211971 to Specht, the article "Development of multi-band color imaging systems for recording of art paintings" to Miyake et al., and the article "Multi-spectral color technology a way towards high definition color image scanning and encoding" to Hill disclose methods for multi-spectral imaging.

Contact Information

8. Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally

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be reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 306-0377.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.

Jingge Wu

Patent Examiner

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8/24/02